REMARKS

Claims 1-5, 9-12, and 14-41 are pending after this amendment.

Applicants have amended claims 1, 5, 9, 14, and 18 in order to more particularly define the invention. The amendments were not necessitated by the claim rejections. Applicants make no admission as to the patentability or unpatentability of the originally filed claims.

Claims 6-8, and 13, have been cancelled. Claims 42-49 were previously cancelled.

The amendments and remarks presented herein are in response to the Office Action dated April 17, 2006.

The Examiner rejected claims 1-4, 9-11, 17-19, 24-26, 31-33, and 39-41 under 35 USC 102(b) as being anticipated by Chou, U.S. Pat. 6,166,342. This rejection is respectfully traversed.

Claim 1 has been amended to incorporate limitations from original claim 13. Claim 1 as amended recites:

> "A keypad, comprising:
> a plurality of keys; and
> a flexible carrier contacting the plurality of keys, the flexible carrier having openings therein between the plurality of keys;
> wherein the openings divide the flexible carrier into at least two serpentine-shaped parts."

Claim 1 now recites that the openings in the flexible carrier divide the flexible carrier into at least two serpentine-shaped parts. An example of a keypad having such an arrangement is shown in Fig. 1a. As stated in the specification, an advantage of such an arrangement is that it increases freedom of movement of the keys associated with the carrier, so as to aid in decoupling the actions of one key from its neighbors. Such a keypad minimizes key bounce and improves the feel of the keyboard for the user.

Chou '342 provides no hint or suggestion of the claimed limitations. Chou '342 merely describes a positioning structure of pushbuttons in a keyboard. The pushbutton of Chou '342 contains a link (bridge) jointedly disposed on a PCB directly for building a lower cost waterproof keyboard in thinner thickness. Chou '342 does not use a carrier for its keyboard; rather, each key is a separate structure that activates a switch in the PCB (see Fig. 3). Chou '342 does mention heat dissipation holes 45 laterally positioned to dissipate heat (col. 3, lines 35-36; Figs. 4 and 6). However, the holes 45 of Chou '342 are positioned in the PCB rather than in a carrier as claimed herein. Furthermore, even if the PCB of Chou '342 is considered to be a carrier, the holes 45 are rectangular in shape and do not divide the PCB into at least two serpentine-shaped parts. In fact, there is no mention anywhere in Chou '342 of any arrangement whereby a flexible carrier is divided into at least two serpentine-shaped parts. Rather, the holes 45 of Chou '342 are intended solely to provide a heat dissipation function and are not directed to increasing freedom of movement of keys or de-

coupling the actions of one key from its neighbors; accordingly, there is no motivation in Chou '342 to provide the particular types of openings between keys that are recited herein.

In his 103 rejection of claim 13, the Examiner cited Fig. 2B of Chou '053. However, Chou '053 still fails to provide any disclosure of openings that divide a flexible carrier into at least two serpentine-shaped parts. Chou '053 merely describes a foldable keyboard having a plurality of sections. Fig. 2B of Chou '053 is a schematic view illustrating a stop of determining a binding area in a circuit section to be folded and combined with a bottom face of an assembly-jointing section (see col. 2, lines 40-44). Slots 33 and cutting lines 6 are shown, but neither of these serves to define any serpentine-shaped parts. Rather, the keyboard sections of Chou '053 are shown as being irregularly shaped but not serpentine-shaped. In fact, there is no mention anywhere in Chou '053 of any serpentine-shaped parts.

In fact, the arrangement shown in Chou '053 would teach away from the present invention: the foldable nature of Chou '053 presumably would be extremely difficult to achieve using serpentine-shaped parts such as recited herein.

Accordingly, claim 1 as amended is respectfully submitted to be patentable over Chou '342 and Chou '053, taken alone or in any combination.

Claims 2-4, 17, and 19 depend from claim 1 and incorporate all of the limitations of claim 1 as amended. Accordingly, for at least the reasons discussed above, claims 2-4, 17, and 19 are submitted to be patentable over the cited references.

Claim 9 has been amended merely to place it in independent form. Claim 9 recites that "the openings divide the flexible carrier into multiple parts."

The Examiner cited Chou '342, stating that openings 45 of Chou '342 divide the flexible carrier into multiple parts, taking each key as an individual. On the contrary, the circuit board 42 of Chou '342 is a single piece, as can be seen in Fig. 6. The openings of Chou '342 are merely rectangular holes that do not divide circuit board 42 into multiple parts. Accordingly, Applicants respectfully submit that Chou '342 fails to anticipate the claimed invention. Applicants fail to understand how the phrase "taking each key as an individual" is relevant, since the claim explicitly recites that it is the carrier that is divided into multiple parts, without reference to the individual keys. If the Examiner is considering the PCB of Chou '342 to be a carrier, it is evident that this PCB is not divided into multiple parts by the openings (holes 45).

Claims 10-11 depend from claim 9 and incorporate all of the limitations of claim 9 as amended. Accordingly, for at least the reasons discussed above, claims 10-11 are submitted to be patentable over Chou '342.

Claim 18 has been amended merely to place it in independent form. Claim 18 recites that "the openings serve to decouple the plurality of keys from each other."

The Examiner failed to provide any explanation of how Chou '342 anticipates the limitations of claim 18. Unless the Examiner can provide an indication as to where Chou '342 provides any discussion of openings in a flexible carrier that serve to decouple the plurality of keys from each other, Applicants respectfully request that the rejection be withdrawn.

Claim 24 recites:

> "A keypad, comprising:
> a plurality of keys, each key having an actuator; and
> a flexible carrier surrounding the plurality of keys and having an opening for each actuator and having additional openings between the actuators, the additional openings serving to decouple the plurality of keys."

Claim 24 specifies that a flexible carrier surrounds the plurality of keys. An opening is provided for each actuator. Additional openings are provided between actuators; these additional openings serve to decouple the plurality of keys. As stated in the specification, an advantage of such an arrangement is that it increases freedom of movement of the keys associated with the carrier, so as to aid in decoupling the actions of one key from its neighbors. Such a keypad minimizes key bounce and improves the feel of the keyboard for the user.

Chou '342 provides no hint or suggestion of the claimed limitations. Chou '342 merely describes a positioning structure of pushbuttons in a keyboard. The pushbutton of Chou '342 contains a link (bridge) jointedly disposed on a PCB directly for building a lower cost waterproof keyboard in thinner thickness. Chou '342

does not use a carrier for its keyboard; rather, each key is a separate structure that activates a switch in the PCB (see Fig. 3). Chou '342 does mention heat dissipation holes 45 laterally positioned to dissipate heat (col. 3, lines 35-36; Figs. 4 and 6). However, the holes 45 of Chou '342 are positioned in the PCB rather than in a carrier as claimed herein. Furthermore, even if the PCB of Chou '342 is considered to be a carrier, the holes 45 do not decouple the plurality of keys. Rather, the holes 45 of Chou '342 are intended solely to provide a heat dissipation function and do not have any effect on the relationships of keys to one another; accordingly, there is no motivation in Chou '342 to provide the particular types of openings between keys that are recited herein.

Claims 25-26, 31-33, and 39-41 depend from claim 24 and incorporate all of the limitations of claim 24. Accordingly, for at least the reasons discussed above, claims 25-26, 31-33, and 39-41 are submitted to be patentable over Chou '342.

The Examiner rejected claims 5-8, 15-16, 20-22, 27-30, and 37-38 under 35 USC 103(a) as being unpatentable over Chou '342 in view of Mitamura and further in view of Soloway. This rejection is respectfully traversed.

Claim 5, which has been amended merely to place it independent form, recites:

> "A keypad, comprising:
> a plurality of keys; and
> a flexible carrier contacting the plurality of keys, the flexible carrier having openings therein between the plurality of keys;

wherein at least some of the openings are cruciform-shaped."

As can be seen in Fig. 4a of the present application, cruciform-shaped openings are well-adapted to fit between keys and provide maximum effect of decoupling the actions of one key from its neighbors. The cruciform shape allows slots to extend in both the horizontal and vertical directions and thereby perform such a decoupling function for keys that are horizontally adjacent as well as those that are vertically adjacent. As stated in paragraph [0043] of the specification, the cruciform shape allows flexing of the carrier while retaining a large amount of carrier material, giving rise to a more rugged platform.

None of the cited references disclose cruciform-shaped openings. The Examiner stated that different shapes of openings would be obvious to one having ordinary skill in the art. Applicants respectfully disagree. None of the cited references use openings for decoupling the actions of one key from its neighbors; accordingly, there would be no motivation for modifying openings to make them cruciform-shaped and thereby maximize the decoupling effect. In fact, the references teach away from such a modification by stating that their openings (such as holes 45 of Chou '342) are for heat dissipation purposes. Furthermore, there is no need in the cited references for a shape that allows flexing of the carrier while retaining a large amount of carrier material, since the circuit board in which the holes are placed is not a key carrier and does not generally flex when a key is pressed.

Claims 7 and 8 have been cancelled.

Claims 15-16 and 20-22 depend from claim 1 and incorporate all of the limitations of claim 1 as amended. As discussed above, Chou '342 fails to describe any arrangement whereby openings divide a flexible carrier into at least two serpentine-shaped parts, as recited in claim 1. Neither of the other cited references, Mitamura and Soloway, provide any hint of such an arrangement. Accordingly, for at least the reasons discussed above, claims 15-16 and 20-22 are submitted to be patentable over Chou '342, Mitamura, and Soloway, taken alone or in any combination.

Claims 27-30 and 37-38 depend from claim 24 and incorporate all of the limitations of claim 24. As discussed above, Chou '342 fails to describe any arrangement whereby openings serve to decouple a plurality of keys, as recited in claim 24. Neither of the other cited references, Mitamura and Soloway, provide any hint of such an arrangement. Accordingly, for at least the reasons discussed above, claims 27-30 and 37-38 are submitted to be patentable over Chou '342, Mitamura, and Soloway, taken alone or in any combination.

On the basis of the above amendments, consideration of this application and the early allowance of all claims herein are requested.

Should the Examiner wish to discuss the above amendments and remarks, or if the Examiner believes that for any reason direct contact with Applicants' representative would help to advance the prosecution of this case to finality, the Examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,
Michael A. Yurochko and
Peter N. Skillman

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By: _____

Amir H. Raubvogel
Reg. No. 37,070
Fenwick & West LLP
801 California Street
Mountain View, CA 94041
Phone: (650) 335-7276
Fax: (650) 938-5200